Available online at www.sciencedirect.com

SciVerse ScienceDirect

Procedia Engineering 15 (2011) 4157 – 4161

Procedia Engineering

www.elsevier.com/locate/procedia

Advanced in Control Engineeringand Information Science

Experiment and Analysis on Setting on Some Computer Lessons for Academician Who Is Major in Math in Normal University

Tao Yuan,a*

Mathematics College of Jilin Normal University, Siping City, Jilin Province, 136000, China

Abstract

We have done a comparative experiment on academician who is major in math in normal university about setting on some computer lessons, and we have made a statistically analysis of grade in exact subject , teaching content and period, we got not only academician's interest change, but also some inspire of setting on some computer lessons for academician who is major in math in normal university.

Keywords: math teaching; computer lessons; assisting teaching

1. Introduction

The mainstream of traditional education of mathematics is from conception to teaching which is based on Defination-Thoery-Deduction-Conclusion. The idea of training mathematic teacher is the maining point which is the same as training the pure mathematians. The students can neither catch the real meaning of definition, theory and problem, nor know how to bring to play for the conclusion; the students who graduate from normal university can not know the real meaning of mathematics especially , for the

* Corresponding author. Tel.: +86-13844441071.
E-mail address: taoyuanjl@gmail.com

1877-7058 © 2011 Published by Elsevier Ltd. Open access under CC BY-NC-ND license.
doi:10.1016/j.proeng.2011.08.780

most of them go to teach the students in primary school after graduating, they are learning machinary by means of pen and paper, and they are lack of interesting for the boring, abstract mathematic theory[1].

Now the computer's technology is developping quickly, especially on the speed, smart, small size, inexpensive and related software developping, which provide better external environment and effective means for reforming mathematics teaching. We introduce the computers into class, go on multimediam teaching, have additional computer's course while teaching the mathematics, and pave for the mathematics' experiment and mathematics modeling[2]. We have some related researching and get some valuable result in order to improve students' ability applying methmatics and stimulate the intrests of studying methematics.

2. Experiment

We selected junior students who is major in mathematics and divided experimental students and contrast ones and the students of two groups have no statical difference to do the experiments. Beside the students study the class of Lesson Outline required, the students who is in experiment study some additional computers' lessons, and the students of two groups study together while being on the lessons of Lesson Outline, and the experiment is on a year. Afer the experiment is end, we have statical analysis for the result of mathematics lessons for two groups, and questionnare the experimental students.

2.1. Experimental Subject

We divided two groups from the students who is in school of 2003 during 2005-2006 academic year, there were 22 students in the experimental group which is 6 boys and 16 girls plus, and 22 students in the contrast one which is 5 boys and 17 girls plus. There is no statical difference between the mathematics' and other foundation lessons' achievements of the two groups.

Table 1.Curriculum Required in Mathematics Lesson Outline

Semester	Curriculum	Curriculum
1	Mathematical Analysis（1）	Advanced Algebra and Analytic Geometry（1）
2	Mathematical Analysis（2）	Advanced Algebra and Analytic Geometry（2）
3	Mathematical Analysis（3）	Approximate Algebraic
4	Complex Function	Advanced Geometry
5	Real Variable Function	Probability
	Elementary Number Theory	
6	Discrete Mathematics	Ordinary Differential Equations
7	Calculation	Differential Geometry
	Advanced Mathematical Analysis	Advanced Algebra
	Basic Geometry	Educational Measurement and Evaluatiion
8	Formal Logic	History of Mathematics and Mathematical Thinking
	Differential Dynamical Systems	Primary Algebra

2.2. Curriculum Setting

Beside from the curriculum of Lesson Outline required which is listed in the Table 1, the students in the experimental group study some computers' lessons, such as C Language, Java Language, Computer Network, Geometer and Matlab Etc. C Language, Computer Network and Geometer is on the fifth semester, and Java Language and Matlab is on the sixth one. The students of contrast group have the original lesson of Lesson Outline required.

2.3. Procedure of Experiment

The time lasts a year from September in 2005 to September in 2006, which is the fifth semeter and the sixth one of students of 2003. The work hour is four which is three for theory and one for experiment for the computers' curriculum.

2.4. Noticing During Experiment

The curriculum which is in the Lesson Outline required should be on together for the students in experimental group and the one in contrast group.

2.5. Experimental Result

During a year for the required curriculum, we analyzed the mathematic score for two groups at the end of academic year, the score for the Probability, Elementary Number Theory and Discrete Mathematics in experimental group is better than the one in contrast one, for P is less than 0.07, and there is no difference

between two groups for the Real Variable Function and Ordinary Differential Equations, for P is bigger than 0.05. the details of result can be found in Table 2.

Table 2. Compairison for Scores of Two groups

Groups	Real Variable Function	Probability	Elementary Number Theory	Discrete Mathematics	Ordinary Differential Equations
Experiment	77.27±9.84	80.63±13.02*	79.77±6.11*	82.23±7.05*	72.09±11.02
Contrast	75.27±8.79	73.09±8.04	75.23±7.23	76.09±10.62	72.07±12.02

* indicates the comparison between experimental groups and contrast one $P<0.05$

3. Results for Questionnair and Students Responsing

We did some questionnaire about setting up computers' lessons for the students who is major on mathematics of Normal University, after we finished the experiment between the experimental group and the contrast one, and the students who was asked was not assigned their names. So we could get the practical feasibility from the inner idea of students; and we wanted to get some shortcoming of the experiment, so the result could direct the right direction for further extension, the detail result could be found in Table 3.

Table 3. Questionnair

Questionnair in Details	Improve on Computers' Exercise	Improve on Initiative of Learning Major Lessons	Improve on Exercise	Improve on Cooperation	Some additional Computers' Lessons
Supported Rational	87.4%	65.3%	55.2%	47.8%	20.1%

4. Experiment Analyzing

4.1. Analyzing the Effect on Elementary Number Theory, Discrete Mathematics, Probability for Setting Up Computers' Lessons

The content of Elementary Number Theory and Discrete Mathematics is emphasis on logical induction, and is closed to the computers' lesson which is being set for experiment. Some idea of setting up the lessons helps for two lessons a lot, some students in the experimental group got higher score of two lesson than the contrast one after studying some related computers' lessons.

Some content of Probability would be used while we analyzed the complexity of algorithm and exception of network, some students could get that the utilization of the theory of mathematics was nearby, and we catch the main idea of related mathematical lessons we should grasp the some related knowledge of programming and computers' network, so this could inpire the interest of students. After the initiative of students was improved, the score of lesson should be improved higher either.

4.2. Analyzing the Less Effect on Real Variable Function and Ordinary Differential Equations for Setting Up Computers' Lessons

The main content of two lessons is focus on the function of real variability[4], emphasize on the realization of concept and abstract theory, and induce logically and abstractly based on the catched theory.

On the other side, the computers' lesson would improve the awareness of analyzing and solving the problem, cultivate the ability of developping programming, logical inducing, directing the students to solve the problem by means of catching the knowledge[5], we could get conclusion that the gap between the compters' lesson which we had set for experiment and the two upper lesson is great from the considering, and students should have some time to transfer the computers' theory to the ability of studying, these caused the little effect on two lessons after finished some computers' lessons.

4.3. Analyzing the Mathematical Modeling Capability for the Students Who Is Major in Mathematics in Normal University for Setting Up Computers' Lessons

Being on the major part of morden mathematics for mathematics modeling, it is essential to cultivate the ability of puting the mathematics into the practise. Using the computers is indispensable during mathematics modeling, bringing the idea of computers' idea into mathematics teaching could make the students more carefully and more patiently, so have higher ability of mathematics modeling.

5. Conclusion and Some Suggestion

Experiments show that a certain amount computers course in mathematics can not only improve the students of mathematics computer practical skills, but also greatly inspire the students' enthusiasm to learn mathematics, thus improving student's math scores. And this conclusion can be extended to other science majors, for this can facilitate better for teaching, and achieve the desired purpose of teaching and effectiveness.

5.1. Some Suggestion

Opening computer courses should not be too much, four or six is appropriate; computer programs do not set up a series of mathematical software program, we should simply select one or two mathematical software program, students can be self-learning,if they use other mathematical software program, this can foster self-learning ability; Some computer courses, especially high-level language courses, may be upgrading over a period of time, we should be adjusted according to actual situation while we select course, adjusting should be random and adjusting should be attention on the relationship with other course.

References

[1] SHANG Chun-hong, Probe and Research of Laboratory Teaching in Mathematics[J]. Journal of Mathematics Education, ,2002;11:66-68.

[2] ZHENG Jing-bo, Ib Merge Mathematical Software and Mathematics Experiment into the leaching of Differential and Intergral Calculus[J]. Journal of Anhui University of Technology(Sociel Sciences),2003;20:82-83.

[3] ZHONG Yi-lin~1; MEI Han-fei; REN Ming-hui; YANG Bo, Some Thought of Course Construction of Mathematics Experiment[J]. College Mathematies,2005;21:26-29

[4] Introduction to 《Real Variable Function on the course》[CP/OL]. http://218.6.128.139/jpkc/sbhsl/kcjj.htm

[5] Gao Wen-xia, Reflection of Teaching computer for non-computer professional[J]. Modern Enterprise Education,2006;4:6-7